

## A B S T R A C T

ITERATIVE DECODING AND EQUALIZING METHOD FOR HIGH SPEED  
COMMUNICATIONS ON MULTIPLE ANTENNA CHANNELS DURING  
5 TRANSMISSION AND RECEPTION

An iterative decoding and equalizing device for  
high bit rate communication over frequency-selective  
channels with multiple transmit and receive antennas,  
10 said device including a decision feedback equalizer  
adapted to receive data from different receive antennas  
and including a forward filter (9) and a recursive  
backward filter (12) fed with calculated weighted  
reconstituted data from the output of a decoder (13) fed  
15 by decision means (11) and means for subtracting the  
output of said backward filter (12) from the output data  
of the forward filter (9) whereby the subtracted data is  
fed to the input of the decision means (11) with the  
output of the decoder (13) and the decision means (11)  
20 produce a statistic which is forwarded to a channel  
decoder with weighted inputs and outputs and said  
decision means (11) take into account the space noise  
correlation at the output of the subtraction means (10)  
and the decision means (11) and the decoder (13) are  
25 separated by space-time interleaving at bit level, which  
device is characterized in that the forward filter (9)  
and the backward filter (12) are iteratively adapted to  
minimize the mean square error at the output of the  
subtractor (10).

30

Translation of the title and the abstract as they were when originally filed by the  
Applicant. No account has been taken of any changes that may have been made  
35 subsequently by the PCT Authorities acting ex officio, e.g. under PCT Rules 37.2,  
38.2, and/or 48.3.